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**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re application of: Christian KROPF et al.

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For: USE OF NANOSCALAR WATER-SOLUBLE  
B-(1,3) GLUCANS

THE ASSISTANT COMMISSIONER FOR PATENTS  
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**NEW CLAIMS**

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17. A method for improved glucan resorption in skin or hair comprising applying to the skin or hair a cosmetic composition comprising nanoparticulate water-soluble  $\beta$ -(1,3)-glucans, which are substantially free from  $\beta$ -(1,6) linkages and have particle diameters of about 10 to 300 nm.
  18. The method according to claim 17, comprising glucans based on yeast of the family *Saccharomyces*.
  19. The method according to claim 17, wherein the nanoparticulate glucans are embedded in a protective colloid.
  20. The method according to claim 19, wherein the protective colloid is selected from the group consisting of polyvinyl alcohol and polyethylene glycol.
  21. The method according to claim 17, wherein the glucan is present in the amount of about 0.1% to about 5% by weight relative to the cosmetic composition.
  22. The method according to claim 17, wherein the glucan resorption is for use as a skin care or hair care agent, and the method comprises applying the cosmetic composition to skin or hair.
  23. The method according to claim 17, wherein the cosmetic composition is a sun radiation protective agent.
  24. A method of preparing glucans for use in a cosmetic composition which has improved glucan resorption comprising the steps of:

contacting glucan  $\beta$ -(1,3) and  $\beta$ -(1,6) linkages with  $\beta$ -(1,6) glucanases to loosen substantially all  $\beta$ -(1,6) linkages and reducing the size of the resulting glucans into nanoparticulate form.

25. The method according to claim 24, wherein the resulting glucans have a particle size ranging from about 10 to about 300 nm.

26. The method according to Claim 24 wherein the reduction of the size of the resulting glucans into nanoparticulate form comprises the steps of:

- a) dissolving the water-soluble  $\beta$ -(1,3) glucans under supercritical conditions
- b) relaxing fluid pressure through a nozzle in a vacuum, gas or liquid, and
- c) evaporating the solvent.

27. The method according to claim 26 wherein the conditions for dissolving the water-soluble solvent are close to critical condition.

28. The method according to claim 24 wherein the nanoparticulate glucans are embedded in a protective colloid.

29. The method according to claim 28 wherein the protective colloid is selected from the group consisting of polyvinyl alcohol and polyethylene alcohol.

30. The method according to claim 26, wherein the glucan is present in the amount of about 0.1% to about 5% by weight relative to the cosmetic composition.

31. A cosmetic composition comprising nanoparticulate water-soluble  $\beta$ -(1,3)-glucans, which are substantially free from  $\beta$ -(1,6) linkages and have particle diameters ranging in size from about 10 to about 300 nm.

32. The cosmetic composition of claim 31 wherein the glucan is present in the amount of about 0.1% to about 5% by weight.

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